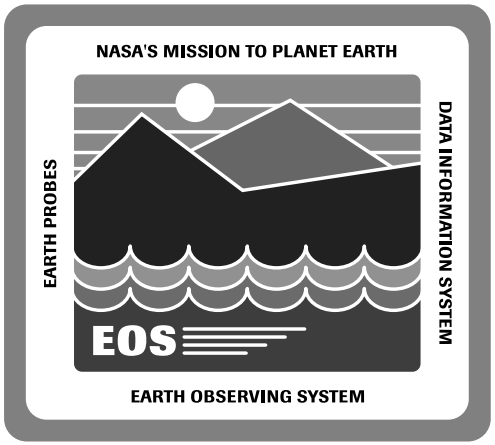
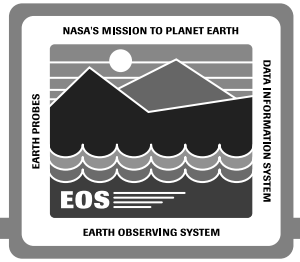


Data Management Prototypes

Dave Peters

24 August 1995

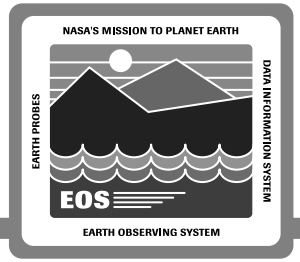
Data Management Prototypes



Distributed Telemetry Retrieval

- **Purpose**
  - **Address distributed telemetry retrieval performance and architecture using a network attached Data Storage Unit**
- **Approach**
  - **Created 24 hour telemetry files on Data Storage Unit**
  - **Created telemetry retrieval processes on network attached workstations**
  - **Created archiver process on Data Storage Unit**
  - **Read from different telemetry files while archiver was writing to Data Storage Unit at 50kbs**
  - **Measured results**

Data Management Prototypes



- **Results**
  - **Constraints**

    Did not have a dedicated 10Mbps network connection for workstations

    Had network traffic from everyday workload
  - **Benchmarks**

    1 telemetry retrieval performed at 200 times real-time

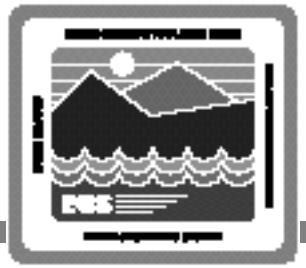
    4 simultaneous retrievals performed at 77 times real-time

    8 simultaneous retrievals performed at 35 times real-time

    12 simultaneous retrievals performed at 24 times real-time

    20 simultaneous retrievals performed at 13 times real-time
  - **Design has been updated to reflect distributed telemetry retrieval approach**

Data Management Prototypes



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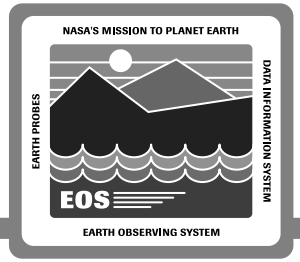
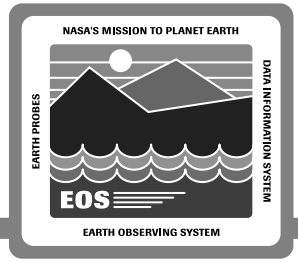
Data Management Prototypes



- **Future Goals**
  - **Benchmark operational LAN to verify results**

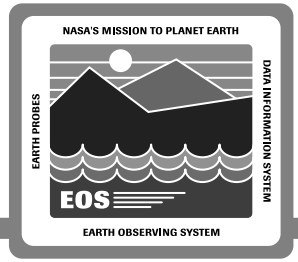
Data Management Prototypes



Database Needs and Selection

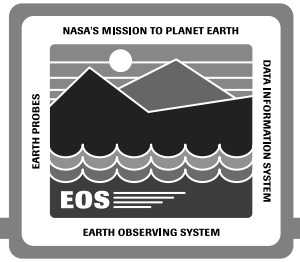
- **Purpose**
  - **Evaluate FOS database needs**
  - **Evaluate Object Oriented Database Management System technology**
  - **Compare Sybase and Oracle**
- **Approach**
  - **Determined database requirements of the FOS**
  - **Studied different OODBMS products**
  - **Used in-house expertise**

Data Management Prototypes



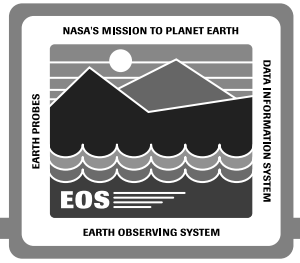
- **Results**
  - **FOS database needs**
    - **Project Database support**
    - **File and telemetry metadata**
    - **PAS and CMS support**
  - **Object Oriented Databases are still immature and do not provide the following capabilities**
    - **DBA utilities**
    - **Performance monitoring tools**
    - **Designer tools**
    - **SQL support**

Data Management Prototypes



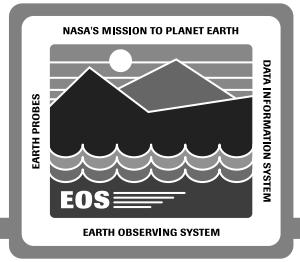
- **RDBMS (Sybase and Oracle)**
  - **Reliable and mature products**
  - **Provide client/server architecture**
  - **Provide a full set of development and maintenance tools**
  - **In-house expertise**
  - **Both products meet the needs of the FOS**
- **Selected Sybase to support operations**

Data Management Prototypes



- **Future Goals**
  - **Currently evaluating Object Oriented to RDBMS interface tools**

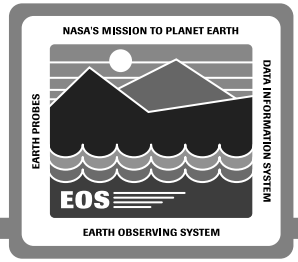
Data Management Prototypes



Persistence Database Interface

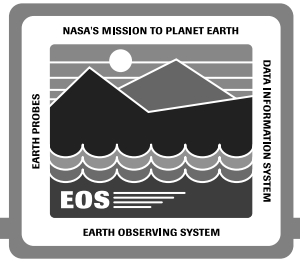
- **Purpose**
  - **Determine if Persistence would be cost effective as an database interface tool**
- **Approach**
  - **Setup file and telemetry metadata tables in Sybase**
  - **Built Persistence interface classes to Sybase tables using StP/OMT**
  - **Link Persistence interface classes with application code**
  - **Performed table operations(add,delete,read,write,update)**
  - **Perform reverse engineering**

Data Management Prototypes



- **Results**
  - **Pros**
    - **Builds interface classes to Sybase from object model**
    - **Supports C++ and standard SQL**
    - **Generates create, read, update, and delete methods based on object model**
    - **Supports locking**
  - **Cons**
    - **Generates a large number of lines of code that would not be used by the FOS**
    - **Not integrated with StP/OMT to perform reverse engineering**
    - **Only supports Suns and HPs**
    - **Very expensive**

Data Management Prototypes



- **Future Goals**
  - **The FOS is currently evaluating RogueWaves DBTools for application interfaces to Sybase**